

Appl. No.: 09/578,998
Amdt dated June 25, 2004
Reply to Office Action of February 5, 2004

Patent
14402-0062

REMARKS

The Applicant submits this response in connection with the above-identified application in response to the Final Office Action mailed February 5, 2004. Claims 2, 3, and 5-21 are currently pending. 2, 3, and 5-21 stand rejected under 35 USC §103 as being unpatentable over United States Pat. No. 5,531,198, issued to Adachi et al. (hereinafter Adachi). The Applicant has cancelled claims 2, 3, and 5-20, amended claim 21, and added claims 22-39. The Applicant respectfully submits that the pending claims are in condition for allowance.

To establish a prima facie case of obviousness, three basic criteria must be met by the Examiner. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the teaching of the references. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. (see MPEP §2143.03).

The present application is directed to a multi-component gas analyzing method using FTIR. FTIR spectroscopy systems operate by exposing a sample to a pulse of radiation and measuring the response therein. During use, the system modulates the infrared light from a light source to provide an output beam in which the intensity of the infrared radiation at various wavelengths is periodically varied. Thereafter, the output signal, referred to as the a free induction decay, is captured by one or more detectors and analyzed. Thereafter, Fourier analysis is performed on the output signal to yield usable information on the chemical composition of the sample.

Claim 21 of the present application is directed to a multi-component gas analyzing method using FTIR and recites quantitatively analyzing a plurality of components in a sample based upon an absorption spectrum obtained by FTIR,

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calculating multi-component concentrations from a mixed gas spectrum by using a quantitative algorithm, and correcting for an error in the calculated multi-component concentrations caused by a change in an intensity spectrum obtained by FTIR due to a presence of a coexistent gas in the sample.

The Adachi reference is directed to a quantitative analytical method and apparatus for determining a plurality of ingredients with spectrometric analysis. More specifically, the Adachi reference discloses establishing groups of ingredients to be measured suitable to plurality of kinds of samples to be measured, determining groups of wave number points corresponding to the respective groups of ingredients, storing the groups of wave number points, measuring the value of a sample of cross and absorption spectrum containing the groups of wave number points, using one of the groups of wave number points to calculate the concentration of values of the ingredients in the sample, determining if the calculated concentration of ingredients is appropriate for the group of wave number points used, and providing the concentration of the ingredients.

Unlike the present application which is directed to correcting for an error in the calculated multi-component concentrations caused by a change in an intensity spectrum obtained by FTIR due to a presence of a coexistent gas in the sample, Adachi compensates for interferences caused by the overlapping spectra of a plurality of components within a sample. As such, Adachi, which arithmetically calculates the concentration of values of the ingredients in the sample, fails to contemplate correcting for a change in an intensity spectrum obtained by FTIR. As a result, Adachi cannot avoid calculating a carbon oxide concentration higher than actually present within a sample. Therefore, the Applicant respectfully submits that Adachi solves a different type of measuring error. As such, the Applicant respectfully submits that claim 21 of the present application teaches away system and method disclosed in Adachi.

Furthermore, the Applicant respectfully submits that Adachi fails to teach or

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suggest all the limitations of claim 21. Claim 21 of the present application recites correcting for an error in the calculated multi-component concentrations caused by a change in an intensity spectrum obtained by FTIR due to a presence of a coexistent gas in the sample. In contrast, Adachi is directed a correction method using a quantitative algorithm is used to separate overlapping spectra and fails to teach or suggest correcting for a change in intensity of an FTIR reading. Therefore, the Applicant respectfully submits that Adachi fails to teach or suggest all the limitations of claim 21 in accordance with MPEP §2143.03.

In light of the foregoing, the Applicant respectfully submits that the cited reference fails to teach or suggest all the elements of claim 21 in accordance with MPEP §2143. As such, the Applicant respectfully submits claim 21 is patentably distinct from the cited prior art reference. In addition, the Applicant respectfully submits that newly added claims 22-39, which variously depend on claim 21, are likewise patentable. In view of the foregoing, it is submitted that all pending claims are now in condition for allowance. Allowance is respectfully requested.

If for any reason direct communication with Applicant's attorney would serve to advance prosecution of this case to finality, the Examiner is invited to call the undersigned attorney at the below listed telephone number.

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The Commissioner is authorized to charge any fee which may be required in connection with this Amendment to deposit account No. 50-1329.

Respectfully submitted,

Dated: June 25, 2004

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